

The BIG SIGMAA News

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Carla Dee (Moravitz) Martin **December 2, 1972 – October 27, 2015**

Carla Dee Martin, the Vice Chair for Programs for the BIG SIGMAA, passed away unexpectedly on October 27. For those who knew her, her loss was a great shock. This issue of the BIG SIGMAA newsletter is devoted to memories of Carla. People who knew her at various stages of her career—her advisor when she was an undergraduate at Virginia Tech, her thesis advisor at Cornell, the head of the department at JMU, and some of her colleagues in the BIG SIGMAA—have written about her intelligence, her poise, and her dedication to her students, her colleagues, and her friends. Not only was she an outstanding mathematician and teacher, she also did rock-climbing in Yosemite, swam/ran/rode triathlons, and played the violin in a community orchestra, all the while raising three children. As vice-chair for programs of the BIG SIGMAA, she was able to schedule world-class scholars to deliver the guest lectures and to skillfully manage the BIG contributed paper session.

Carla left behind three small children, currently in the care of Carla's parents. A Go Fund Me site has been set up to raise money to support Carla's children. ("Carla's Kids" on GoFundMe.) The response to this site, both in terms of the speed with which money was raised and the comments that people wrote, indicates the love and respect that Carla attracted in all the communities of which she was a part.

Several years ago Carla wrote a piece for the BIG SIGMAA newsletter about how her love of music led to a career in mathematics. That piece is re-printed here; re-reading it brings back memories of Carla's spark and joy and reminds us yet again of what a remarkable person she was.

Allen Butler Wagner Associates Chair, BIG SIGMAA

Although I really only knew Carla through our interaction in BIG SIGMAA, she was the kind of person that made you feel she was a friend from the moment you met her. As so many others have said before me, she had the winningest smile and you just knew this was a true reflection of the happiness and warmth she wanted to share with the rest of the world. The one small thing I might add to her tributes is that she was a “trooper”. She never seemed to let anything get her down. When she injured her foot right

before the Annual Meeting, she didn’t ask anyone to replace her. She simply hobbled around on her crutches as best she could. The only concession she made was to introduce the speakers from her chair in the audience rather than going back and forth to the podium each time. And of course she did so with that beautiful smile!

She recently told me that her move from James Madison University to the National Security Agency was not an easy decision

for her. She thought she had found the perfect job at JMU and couldn’t imagine being nearly as satisfied anywhere else. She changed jobs because family was her number one priority. Even though it was very different, Carla discovered that she was happy and extremely satisfied in her new role at NSA. I don’t believe that the job was really all that great, I believe that Carla was that great. She made the best of every situation and everyone around her benefited from her positive attitude. I will miss her.

Greg Coxson Vice Chair for Membership, BIG SIGMAA

Carla Martin joined the board of BIG SIGMAA at the perfect time. Some of us had been on the board for several years and were feeling, individually and collectively, that it was time to have some new faces. The board was also all male at the time, so it was wonderful when Carla showed up. Even so, we did not know the extent of our good fortune.

Carla got involved right away. She did such a great job from the start that I was likely not alone in coming to expect that everything was going to go okay if Carla was there. At the Joint Mathematics Meeting, she took on the responsibility of introducing our invited speaker with a winning confidence and calm. In addition, for several years she selected the talks for the contributed paper session, and would lead the resulting sessions with a sunny professionalism. Even when there were troubles with the lights, or attendance was low, or the reception food service was noisy or delayed, Carla was unflappable.

The shocking news of Carla’s death a week ago has led to an out-pouring of testimonials and tributes. One of my favorites is the one her PhD advisor, Charles Van Loan, provided at the Go-FundMe site created to support her three children. Van Loan recalled that Carla would show up at every advising session with a smile. I know that smile. That smile was there even at the most challenging times. You knew that behind that

smile, there was a steely, calm determination to make everything go well. And with Carla everything did.

Carla was the perfect role model for young women interested in Mathematics as a career. For a couple of years, I had the opportunity to serve as a non-academic advisor for an undergraduate student at Rowan University named Brooke Logan. Brooke came to the Joint Mathematics Meeting two of her three years at Rowan, and would spend the time exuberantly exploring all that JMM had to offer. There was no way I was not going to introduce Brooke to Carla, because if anyone could inspire Brooke (not that Brooke need inspiring), it was Carla. Not only had Carla earned her PhD at a top school (Cornell), but she had worked as an applied mathematician in industry, served as a professor (at James Madison University), and had married and had three young children.

Several years ago, Carla’s husband found a job at the National Security Agency, starting a family move from Harrisonburg, Virginia to the outskirts of Washington DC. Shortly thereafter, Carla herself joined the NSA. I remember she was so happy to discover that her new employer provided numerous benefits to young families. In particular, the NSA provided on-site child care; that was perfect, because Carla needed her youngest child close-by due to some serious food aller-

gies that caused Carla not a small amount of worry. She was a devoted mother before all else.

The timing of Carla’s tenure at the NSA, short as it was, created opportunities both for Carla and the NSA. Not long after she joined the NSA, the embarrassment caused by the Edward Snowden affair pushed the organization to break with their long-standing policy of hiding the identities of all their employees. The organization even allowed a public relations film to be made, involving the interviewing and filming of some of their employees. Fortunately, they had a photogenic, intelligent and eloquent new employee in Carla Martin. At the next BIG Committee meeting Carla related, with that smile again, that she had become, to some degree, “the Public Face of the NSA.” Of course she had! Carla brought such an appealing combination of talents and attributes to every activity.

I am old enough to remember a time when young women were not that common, or accepted, at the highest levels of Mathematics, Physics and Engineering. Even if things had not changed, I would not have put it past Carla to accomplish the things she did. But I am glad the profession has become more open to young women, and if anyone asks me why, I have a ready answer: “Because – Carla Dee Martin.”

Phil Gustafson Colorado Mesa University

My first memory of Carla was reading a nicely written article she published in the August/September 2009 issue of the MAA FOCUS. Her article was entitled “What Can I Do with a Math Degree?” At the time this article appeared I was serving as the Vice Chair of Programs for BIG SIGMAA, so I invited her to submit an abstract for the January 2010 Contributed Paper Session *Mathematics Experiences in Business, Industry and Government*, hosted by the BIG SIGMAA at the JMM in San Francisco. She did this, presenting a talk entitled “Why Companies Need Mathematicians Even During Tough Times.” This insightful and timely presentation appealed to a wide cross-section of

conference participants and was well attended.

From 2010 – 2013 I served as Chair of BIG SIGMAA, and Carla took over as the Vice Chair of Programs, an elected position she held through 2015. I greatly enjoyed working with Carla as she facilitated the BIG SIGMAA JMM Guest Lecturer events and organized the BIG SIGMAA Contributed Paper sessions. As the point of contact with our speakers, her friendly and capable approach was always well-received.

Another shared experience I had with Carla was juggling JMM conferences and

careers with young children. She and I often had strollers and kids with us in the conference hallways, and it was a relief to be able to relate to her in this way, sharing math parenting stories while surrounded by the busy activities of the JMM.

Through her helpful nature and desire to participate, Carla brightened the lives of many people. Carla pursued a path that took her through our mathematical community, both in academia and in BIG, and along the way she contributed so much and enriched so many in her cheerful and capable way.

Love of Music Leads to a Mathematics Career Carla Martin

Igor Stravinsky, 20th century Russian composer, said, “Musical form is close to mathematics--not perhaps to mathematics itself, but certainly to something like mathematical thinking and relationship.” You have no doubt heard of the interplay between math and music. I use it to explain my later interest in mathematics after spending my entire childhood and adolescence dreaming of life as a violinist.

In college I was concertmaster of the university symphony, but I was starting to be inspired by another subject--mathematics. After initial trepidation towards the subject I realized that I enjoyed mathematics problems as much as playing the violin. Once I realized there were measurable connections between math and music, I was hooked. I immediately changed my major to math and spent my last two years working on a project that combined music and mathematics that still seems to attract attention today.

My interest in mathematics has always been about its applications and connections with other fields. Shortly before graduation, I had trouble narrowing down my career goals. While I desperately

wanted to attend graduate school, the timing did not seem ideal for me. Instead, I accepted a consulting job at PricewaterhouseCoopers (now a part of IBM Global Business Services) in the Washington DC area. This was an ideal job at the time, as I loved working math problems and I loved working with people. Consulting incorporated both of these aspects and also allowed me to participate in many different projects, each with new challenges.

I worked on numerous projects. My favorite project was for the National Highway Traffic Safety Administration (NHTSA). NHTSA noticed an increase in single-car accidents since anti-lock brakes (ABS) became standard on most cars. To understand this correlation, we performed a study on driver experiences with ABS and determined that the increase of single-car accidents was attributed to driver error when the ABS engaged (panic, overconfidence, etc.). The results were used by NHTSA to plan activities that addressed the public’s knowledge of ABS in order to improve public safety.

I also mined large amounts of data. Supermarket shopper cards are one such exam-

Charles Van Loan Cornell University

As a PhD student, Carla was everything you could ask for. Dedicated, enthusiastic, and patient. She was a great writer, a great researcher, and a born teacher. I will be forever impressed with how she connected classroom work to forefront research in computational mathematics. Every one of our meetings would start with her smile. And now I will try to do the same whenever I recall those times and her many contributions

ple where consumer purchasing histories are used for targeted coupons. My particular project involved mining credit card transactions in order to target coupons on credit card statements. This is perhaps the most mathematical of the projects I describe here; techniques used involved nearest-neighbor models as well as neural network models.

I continued as a violinist by joining two symphony orchestras in the area. Always up for a new challenge, I dabbled in some mountaineering adventures that included a summit attempt of Mt. Shasta, a 14,000 ft glaciated volcano in northern California. After several other adventures, I had a

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Love of Music Leads to a Mathematics Career (continued)

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new sport as well: rock climbing. Just as my extracurricular interests were shifting, so were my professional interests. The mathematics itself, rather than simply the application, was now becoming my focus. Though on a very successful career path, after four years I left consulting for a Ph.D. program in Applied Mathematics at Cornell University.

While in graduate school, I continued playing violin, and eventually taught rock climbing in addition to teaching calculus! I enjoyed cross-referencing teaching examples in both climbing and math classes. The music-and-math relationship was endemic throughout both departments. The symphony orchestra at Cornell was made up of over 50 percent science/math/engineering majors. The Cornell Math Department puts on a spring concert each year that showcases musical talent from its faculty, staff, and students. The standard of musical talent at these concerts was just as high as other high quality amateur chamber music concerts in the area. It was an exciting place to be.

At first, the transition from consulting to graduate school was difficult. My peers were not transitioning from the working world and many of my professors had never worked outside academia. I used a different mode of thinking and was unable to figure out how to make my professional experience work to my advan-

tage. Eventually I realized that my work experience provided me with better focus and career goals. I wanted to be in academia and more importantly I wanted to be in a position that could inspire others to pursue mathematics by demonstrating its ubiquity across many application areas. My research area is numerical linear algebra and in particular extending linear algebra factorizations to tensors. Somehow I had come full circle. I was

James Madison University, I have worked to inspire students to pursue mathematics-related careers by introducing them to the plethora of applications in various areas. I have made it a priority to introduce research-like thinking into the classroom, which helps students to question results and think critically. My approach to teaching always emphasizes a real-life connection. I just coauthored a book with Anthony Tongen called



now working on problems in many application areas such as image processing, data mining and chemistry since multidimensional data techniques are crucial in these areas.

My interest in seeking the interplay between various fields has defined my professional research since graduate school. I have continued work in tensor decompositions with applications in imaging, geology, computer science, and communications. As a faculty member at

“Keeping it R.E.A.L.: Research Experiences for All Learners” published by the MAA that includes a description of real life in-class projects designed to develop critical thinking skills in the classroom.

I still play the violin and rock climb. Along the lines of seeking out new challenges I’ve now completed several triathlons. Though lately my biggest challenge has been raising a 7, 4, and one-year old to enjoy the world around them.

Ezra “Bud” Brown Virginia Tech

Carla Dee Moravitz Martin came to Virginia Tech in 1991, majored in mathematics with an applied emphasis, was involved with a multitude of service projects, and was selected Virginia Tech's Woman of The Year in 1994-95. She was a Rhodes Scholar nominee, with both the intellectual talent and the physical vigor that included rock-climbing, cycling, hiking, and eventually participating in triathlons. She was also a terrific violinist who could have played professionally.

I first met Carla during her junior year at Virginia Tech, was her adviser for her senior undergraduate research project, and kept in regular contact with her and her family after she graduated in 1995. She was as quick to catch on to new ideas as any student I've encountered in all of my years at Virginia Tech. She mentored many undergraduates at Tech, including Mark Embree (VT '96)—a Rhodes Scholar and DPhil from Oxford who is now on the Tech mathematics faculty.

She worked for PriceWaterhouse for three years, went to graduate school in Applied Mathematics at Cornell, joined the James Madison University Math Department, and was active, both as an MAA Project NExT Fellow and as a driving force of the MAA BIG SIGMAA.

She left the academic world for the "G" part of BIG, where she quickly made a name for herself with all sorts of projects, both research and mentoring, that I cannot tell you about, and all kinds of leadership roles that I'll be glad to tell you about. She would surely have become one of the leaders of the mathematics community. In her office—which includes many stars—she was well on her way to being a star.

That star is now extinguished.

David Carothers James Madison University

David Carothers delivered a tribute to Carla at the Fall section meeting of the Maryland-DC-Virginia section of the MAA. Here is the text of what he said:

At the 2009 Fall Section meeting, the Friday Workshop was led by Carla Moravitz Martin. Carla combined two of her passions in considering what we can learn from outdoor and extreme sports to encourage greater participation and success in mathematics and science. Carla was a member of the faculty at JMU from 2006 to 2012, when for family reasons she moved to Maryland where she eventually worked for the National Security Agency. Many of you knew Carla from MAA and other mathematical activities.

Some may have heard the tragic and nearly unbelievable news ten days ago that Carla had died. I told the officers I was willing to say a few words about Carla at this meeting.

I should say up front that I am not the person in this room who has known Carla the longest. You see, in 1991 Carla entered Virginia Tech as a freshman where she became an outstanding mathematics major. It was at Tech that she met the person who would become her honors advisor, Bud Brown. Bud and Carla remained very close over the years. In 1995, Carla was named as Virginia Tech's Woman of the Year, the outstanding female student in the graduating class, based on her accomplishments in academics, music, and community service. Carla worked at Price Waterhouse for a few years followed by a doctorate at Cornell before coming to JMU.

I wear running shoes a lot, but usually only when I am running. But I wore them today in remembering Carla. Carla loved the outdoors, and among other things she was an instigator in organizing several of our faculty in preparing for a triathlon even though all of us had not previously participated in one or more of the segments. Carla loved challenges; hiking, cycling, or what seemed to me to be fairly extreme rock climbing.

I also wore my musician tie today. I am a brass player; I should say a mediocre brass player. Carla played the violin, and there was nothing mediocre about it. Among all of the musicians I know who are not professionals, Carla was the best.

I also wore my MAA shirt, and it was as a mathematician that most of us knew Carla. And she was a brilliant mathematician. Her research was outstanding and internationally recognized. She was also brilliant as a mentor of research students and as a teacher. She was a leader in outreach, one example being a conference for middle school schools girls to encourage participation in mathematics and science that has grown into a major event and for which she and a colleague secured the initial grant funding. Many of you are aware that we have had quite a few outstanding young faculty at JMU, and some may even know some of my former colleagues when I was in Michigan. It is no small thing that I have said several times over the past few years that among all of the early career faculty members I have ever known, Carla was the best.

I was thinking about this a couple days ago when I heard the director of mathematics research at NSA say a few words about Carla. He and Carla would often speak in his office or her office, and he might say something like “here is something you should think about when you become director of mathematics research.” Carla would ask what he was talking about, and he would respond that even in a short time many had become aware of her abilities and it seemed inevitable that if she remained in mathematics research at NSA she would eventually become director.

So, my experience was indeed not at all unusual. Whether it was as a faculty member, an NSA researcher, an undergraduate, a musician, or even as a mother or volunteer, it was impossible to speak about Carla without using superlatives.

We will miss Carla terribly, but I hope that we can continue to draw inspiration from her life. I will close by offering part of one of Carla's favorite quotes, sometimes attributed to Mother Teresa. “What you spend years creating, others could destroy overnight. Create anyway. ... Give the best you have, and it will never be enough. Give your best anyway.”